

**REMARKS**

The above amendment and these remarks are responsive to the Office action of Examiner Thong H. Vu, mailed 14 Jan 2005.

Claims 1, 4-5, 7-11, and 14-24 are in the case, none as yet allowed.

***Double Patenting***

Claims 1-24 have been rejected under the judicially created doctrine of double patenting over claims 1-14 of U.S. Patent 6,839,732 B1 (Vincent).

Claims 1-24 have been provisionally rejected under the judicially created doctrine of double patenting over claims 1-22 of copending Application No. 09/813,910.

Applicants have amended claims 1, 4-5, 7-11, and 14-24, and with this amendment traverse these double patenting rejections.

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Vincent does not concern any kind of tunneling protocol, Vincent does not concern any VPN's, Vincent does not concern IP Sec-based VPN's, Vincent does not concern multiple VPN connections between endpoints, Vincent does not concern nested VPN connections, and Vincent does not concern nested VPN connections with coincident endpoints.

Since none of these concepts are contained in Vincent, Vincent does not identify, and does not solve any problems associated with these ideas. Generally stated; Vincent is quite irrelevant to current invention. Yes, they both involve TCP/IP, but of course, this is way too general and vague to be useful.

The Examiner states, in trying to relate Vincent claim 8 to the current invention claim 11, that "it is clearly that an operation to negotiate or define parameters included the encapsulate / decapsulate data is equivalent to the implement process for a queue using a pool of domain sockets to establish a TCP/IP inbound connection ...".

Applicants traverse. The current invention (all claims, as amended) uses the terms 'encapsulate' & 'decapsulate' in the technical context of the IP Sec

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protocol, and they do not mean 'an operation to negotiate or define parameters ... connection'.

With respect to copending Application No. 09/813,910, the copending application uses (exploits) the invention of the 'current invention' to further advantage by providing the benefits of VPN NAT. The copending application is about VPN NAT over nested VPN connections with coincident endpoints. One way of looking at it is that the new technical problems posed by current application caused VPN NAT to be 'broken' (essentially due to the particular problems around the coincident endpoints). VPN NAT was too useful to allow this situation, so the copending application fixes it.

A key difference between the copending application and the present application is found in claim 3 of the copending application, which states "... propagating a network address translation rule from said outer connection to said inner connection.". This gets to the heart of the technical problem solved by the copending application. Obviously the current application doesn't have this, since - the current application doesn't use VPN NAT.

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Applicants request that the Examiner reconsider and withdraw the double patenting rejections.

**35 U.S.C. 102**

Claims 1-24 have been rejected under 35 U.S.C. 102(e) as anticipated by Giniger et al [Giniger 6,751,729 B1].

Applicants have canceled claims 2,3,6,12,13, and have amended the other claims to clarify the distinctions with respect to the cited art, as those distinctions are described hereafter.

Giniger does not anticipate the basic key concepts in the current invention, nor how the key concepts are combined, nor how they are used. Giniger does not solve the problems solved by the current invention, and in fact Giniger does not even address these problems.

Each of the claims has been amended (directly, or by amendment to base claims) to clarify these distinctions.

The basic key concepts of the current invention are

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those of a IP Sec-based VPN connection that has another such connection nested inside it. This has immediate implications for how protocol (Internet Protocol) traffic needs to be handled.

In addition to the nesting, the current invention identifies and solves the special problems associated with these nested connections when the endpoints (on at least one end) of both of them reside on the same node. This makes them coincident. There are particular technical problems with this situation, and particular customer benefits to solving them.

These basic concepts are simply not in Giniger, and not addressed by Giniger. Hence Giniger does not disclose how to solve them, and the claims all distinguish Giniger.

Further detail and elaboration on these points in contained the responses below.

Concerning item 6 "as per claim 11, Giniger discloses a method for nesting connections between a plurality nodes communication network, ..." The novel point is in the 2nd clause of claim 11, which recites the "outer connection".

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Yes, both the current invention & Giniger use DHCP. Giniger does not use an outer connection.

The point of the 3rd clause of claim 11 is that an inner (second) VPN connection is being set up. It is set up internally (tunneled, nested) within the 1st (outer) connection. Note that this is not two VPN connections between the same nodes; that is, not two parallel VPN connections. Yes, Giniger seems to establish an IP Sec-based VPN. But Giniger does not set up two connections and does not set up two connections with one nested inside the other. The 'tunneling communication service 350' in Fig 3 of Giniger is merely the IP Sec tunneling mechanism. It is important that tunneling of IP traffic is basic to the IP Sec architecture (see for example, IETF RFC 2401). In these terms, the current invention concerns a tunnel within a tunnel. Giniger does not do this. The Examiner's phrase 'internal data path' does not occur in Giniger page 10, lines 21-65.

With respect to the 4th clause of claim 11, as amended, Giniger does not 'negotiate over outer connection parameters defining said secure nested inner connection'. The parameters referred to are the results of the IKE

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negotiation, not a response from a DHCP server. Hence the cited section of Giniger (col 11 line 55-col 12 line 2) is irrelevant.

With respect to the 5th clause of claim 11, 'start said inner connection' refers to starting a nested IP Sec connection. Giniger does not have nested IP Sec connections, hence does not start nested IP Sec connections. The cited section of Giniger (page 12, lines 3-43) does not start a nested IP sec connection. It can be noted that starting a IP Sec connection is technically distinct from the IKE negotiation which precedes the start. (This negotiation occurred in the previous clause.)

With respect to clause 6 of claim 11, the 'linking' of the inner connection to the outer connection is crucial. This relationship is what allows the subsequent TCP/IP traffic (potentially of all types) to be correctly processed by the inner connection, then by the outer connection, at both ends of both connections. Even if Giniger does have 'two pairs public/private keys' as the Examiner states, Giniger does not do this, because Giniger does not have an inner connection, hence does not link an inner connection to an outer connection.

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Concerning item 7 of the Office Action, "as per claim 8, Giniger discloses a method for operating a first one plurality of nodes in a communications network, ..."

With respect to the 1st clause of claim 8, yes Giniger starts ('establish') tunnels. Giniger does not indicate that nested tunnels are used anywhere. Hence Giniger does not establish using an inner and an outer connection, and does not establish at a said first node a coincident endpoint for an outer and an inner tunnel.

With respect to the 3rd clause of claim 8, Giniger does not selectively encapsulate said traffic to said outer connection. This is because Giniger does not contain the concept of an outer connection.

Concerning item 8 of the Office Action, "claims 21, 24 contain the similar limitations set forth of method claims 8. Therefore claims 21, 24 are rejected for similar rationale set forth in claim 8".

Applicants respond that Giniger does not contain nested tunnels, hence does not contain nested tunnels with

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coincident endpoints (see fig 2 for an explanation of what coincident means for VPN connections, with corresponding text pp 7-10 of the current invention). And importantly, Giniger does not link an inner connection to an outer connection. Yes, Giniger's 'root manufacturing certificate authority' has 'two pairs of public/private keys' (col 12, 53-54). This has no bearing on the current invention for these reasons; the current invention does not require (but may use) security certificates of the sort Giniger refers to; even if an embodiment of the current invention used certificates, this use has no relevance on the structural relationship of two VPN connections of applicants' claims. Hence Giniger's use of two pairs of keys is irrelevant.

Concerning item 9 of the Office Action, "as per claim 15, Giniger discloses a system for nesting connections between a plurality nodes a communication networks, comprising ..."

Applicants traverse. The material cited by the Examiner, Giniger col 12, ling 44-col 14, line 62, does not contain nested connections. Giniger does not contain nested connections anywhere. Hence Giniger also does not contain nested connections with coincident endpoints.

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To elaborate, for example; the fact that the connections are nested with coincident endpoints places a unique and nontrivial technical problem on the node in which the coincident endpoints reside. There are various aspects to this technical problem which can be summarized as the problem of recognizing various classes of outbound and inbound IP traffic, and handling these various classes correctly. For outbound, for example, some traffic (between the respective nodes) must go inside the outer tunnel and not the inner tunnel, some traffic must go in the inner tunnel and the outer tunnel, and some traffic must go in neither. It is these sort of problems which are solved by the method and system of the invention as set forth in the amended claim 15.

Concerning item 10 of the Office Action, "as per claims 2-3, 9, 16-17 Giniger discloses said inner connection being a secure connection (or an IP Sec connection) ... (col 10, lines 21-65)": Applicants traverse. Giniger simply does not contain anything like an 'inner connection'. Not in the cited section, nor anywhere else. In the cited section, Giniger does refer to an 'internal data path', as contrasted to an 'external interface module'. These are

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shown in Giniger fig 3 as 312 & 320 respectively. Whatever they might mean in the context of Giniger, it is very clear from Fig 3 that they cannot be alternate terms for what the current invention refers to as an inner and outer connection, for multiple reasons. First the 'external interface module' is not a VPN connection. Second, these two entities do not connect two network nodes. Third, they do not connect two nodes with coincident endpoints. All of these distinctions are set forth in all of applicants' claims as now amended.

Concerning item 11 of the Office Action, "as per claims 4, 7, 10, 14, 18 Giniger-Rao disclose a L2TP connection for tunneling packets across said communication network (Giniger, col 7, 322-52)": Though not specified in the statement of rejection, applicants assume the Rao is a reference to US 6,674,756 B1. Yes both Giniger and Rao mention L2TP. But claims 4, 7, 10, 14 & 18 all build upon earlier claims, and hence make the point that the nested VPN connections of claims 1,2 & 3 (in the case of claim 4), 5, 6 (in the case of claim 7), 8 & 9 (in the case of claim 10), etc.; and these earlier claims concern ideas and concepts not in Giniger or Rao (or their combination), Hence 4, 7, 10, 14 & 18 concern the novel nested connections with

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coincident endpoints of the current invention, over L2TP (not merely the use of L2TP). Hence the ideas in 4, 7, 10, 14 & 18 are not in Giniger or Rao (or combination).

Concerning item 12 of the Office Action, "as per claim 6, Giniger discloses establishing a local coincident endpoint of said inner and outer connections at said gateway (Giniger, edge device, Fig 3)": Applicants traverse. Giniger fig 3 and all of its description, simply do not contain (and certainly do not disclose) a 'local coincident endpoint'. To see this, note that item 110 in Giniger fig 3 corresponds to 16 in fig 2 of the current invention.

Consider Giniger fig 8, items 815, 825 and 835; yes it is true that these represent tunnels, but nowhere in Giniger is there any specifics beyond that. The tunnels are not nested but rather parallel. And in col 16 where Giniger mentions 'from tunnel 815 to a tunnel 825' he is referencing an end-to-end relationship between tunnels. Not a nesting, as all of the claims in the current case specifically state.

Concerning item 13 of the Office Action, "as per claim 12, Giniger discloses sending outbound traffic in said inner connection double nested in said outer connection (Giniger,

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two pairs public / private keys, col 12, 44 - col 14, 62)": Applicants traverse. As mentioned earlier, the simple existence of two keys determines nothing about the relationship of corresponding tunnels. In addition, the two keys only concern a single tunnel, since Giniger is using x.509v3 (col 12, line 58). Hence Giniger does not contain 'sending outbound traffic in said inner connection double nested in said outer connection'.

Concerning item 14 of the Office Action, "as per claim 13, Giniger discloses operating said ISP node to decapsulate said outer connection; and operating said client node to decapsulate said inner connection as inherent features of two pairs of public/private keys": Applicants traverse. Giniger does not decapsulate said outer connection followed by decapsulate an inner connection. In fact Giniger does not even decapsulate an outer connection, but rather merely decapsulated traffic from a connection. The qualification of 'outer' (and 'inner') is completely unnecessary in Giniger because Giniger does not use, or contain, or disclose the concepts associated with nested connections.

Concerning item 15 of the Office Action, "claims 1, 5, 19, 20, 22, 23 contain the similar limitations set forth of

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apparatus claim 15. Therefore, claims 1, 5, 19, 20, 22, 23 are rejected for the similar rationale set forth in claim 15": These objections are addressed above under response to item 9 of the Office Action, concerning claim 15. The above response applies to 1, 5, 19, 20, 22 and 23.

### SUMMARY AND CONCLUSION

Applicants urge that the above amendments be entered and the case passed to issue with claims 1, 4-5, 7-11, and 14-24.

The Application is believed to be in condition for allowance and such action by the Examiner is urged. Should differences remain, however, which do not place one/more of the remaining claims in condition for allowance, the Examiner is requested to phone the undersigned at the number provided below for the purpose of providing constructive assistance and suggestions in accordance with M.P.E.P. Sections 707.02(j) and 707.03 in order that allowable claims can be presented, thereby placing the Application in condition for allowance without further proceedings being

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necessary.

Sincerely,

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